Child Stress Disorders Checklist: A Measure of ASD and PTSD in Children

GLENN SAXE, M.D., NEHARIKA CHAWLA, M.A., FREDERICK STODDARD, M.D., NANCY KASSAM-ADAMS, PH.D., DIANE COURTNEY, R.N., KELLY CUNNINGHAM, M.S.W., CARLOS LOPEZ, M.D., ERIN HALL, M.A., ROBERT SHERIDAN, M.D., DANIEL KING, PH.D., AND LYNDA KING, PH.D.

ABSTRACT

Objective: To assess the psychometric properties of the Child Stress Disorders Checklist (CSDC), a 36-item observer-report instrument that measures acute stress and posttraumatic symptoms in children. **Method:** The CSDC was administered to parents of 43 children with acute burns and 41 children who had experienced a traffic crash. This instrument was also administered to the burned children's primary nurse to estimate interrater reliability. The CSDC was completed again by parents of burned children, 2 days and 3 months later. Convergent validity was determined by correlating scores on the CSDC with scores on instruments of known validity for assessing posttraumatic stress disorder (PTSD) in children. Concurrent validity was determined through an examination of the relationship between CSDC scores and an index of trauma severity (percentage of body surface area burned). Discriminant validity was assessed by administering the Child Behavior Checklist (CBCL): it was hypothesized that PTSD symptoms would be more closely related to the PTSD scale of the CBCL than the Thought Problems scale of the CBCL. **Results:** The CSDC has reliable and valid psychometric properties. **Conclusions:** The CSDC, an observer-report instrument of ASD and PTSD in children, has important utility in clinical and research settings. *J. Am. Acad. Child Adolesc. Psychiatry*, 2003, 42(8):972–978. **Key Words:** Child Stress Disorders Checklist, posttraumatic stress, acute stress.

Acute stress disorder (ASD) and posttraumatic stress disorder (PTSD) represent some of the core features of a child's reactions to traumatic events (Daviss et al., 2000; Green et al., 1991; McLeer et al., 1988; Pynoos et al., 1987; Sack et al., 1993; Stoddard et. al, 1989). Symptoms of both disorders include intrusive recollections, numbing and avoidance, and hyperarousal (American Psychiatric Association, 1994). The differences between posttraumatic symptoms expressed in the proximal and distal aftermath of a trauma are formalized in the *DSM-IV* with the distinction between ASD and PTSD. ASD describes the psychopathological response in the immediate aftermath of a traumatic event that occurs up until 1 month following the trauma. PTSD describes the psychopathological responses that persist after 1 month. In addition to the temporal distinction between ASD and PTSD, these disorders are also distinguished by prominent dissociative symptoms. Individuals with ASD often have significant dissociative symptomatology; these individuals feel detached from their bodies and experience their environment as unreal and dreamlike. Such individuals often experience a decrease in emotional responsiveness, numbness, and difficulty recalling elements of the traumatic event. PTSD causes tremendous problems for a child's social, educational, and biological development (Perry and Pollard, 1998; Pynoos, 1993, 1996; Saigh and Bremner, 1999). ASD carries significant psychiatric morbidity and may be a predictor of PTSD (Bryant, 2000;

Accepted February 14, 2003.

Dr. Saxe is Chairman, Department of Child and Adolescent Psychiatry, Boston Medical Center, Boston University School of Medicine and Director, Center for Medical and Refugee Trauma, National Child Traumatic Stress Network. Dr. Stoddard is Chief of Psychiatry, Shriners Burns Hospital, Harvard Medical School. Dr. Kassam-Adams is with the Children's Hospital of Philadelphia. Ms. Courtney is with Shriners Burns Hospital, and Ms. Chawla, Ms. Cunningham, Dr. Lopez, and Ms. Hall are with Boston University School of Medicine. Dr. Sheridan is the assistant Chief of Staff at Shriners Burns Hospital. Dr. Daniel King and Dr. Lynda King are with the National Center for PTSD, VA Boston Healthcare System and Boston University School of Medicine.

Supported by NIMH grant R01 MH57370 and SAMHSA grant U79 SM54305 to Dr. Saxe. Portions of this work were supported by MCHB grant R40 MC 00138 03 to Dr. Kassam-Adams and Dr. Flaura Winston.

Article Plus (online only) materials for this article appear on the Journal's Web site: www.jaacap.com.

Reprint requests to Dr. Saxe, Department of Child and Adolescent Psychiatry, Dowling 1 North, One Boston Medical Center Place, Boston, MA 02118; e-mail: glenn.saxe@bmc.org.

0890-8567/03/4208–0972©2003 by the American Academy of Child and Adolescent Psychiatry.

DOI: 10.1097/01.CHI.0000046887.27264.F3

Spiegel et al., 1994). There have, however, been few studies of ASD in children (Daviss et al., 2000).

The assessment of traumatic stress in children has lagged behind that of adults, and psychometrically valid instruments are just now becoming available (March and Albano, 1996; Ohan et al. 2002). To our knowledge, there are no published instruments validated for assessment of ASD in children. This paper describes a study designed to test the psychometric properties of the Child Stress Disorders Checklist (CSDC; available on the *Journal's* Web site at *www.jaacap.com* using the Article Plus feature), formerly the Child Stress Reaction Checklist (Saxe, 1997), an observer-report measure of ASD and PTSD symptoms in children. Because there are few observer-report instruments of PTSD and no instruments of ASD in children, the establishment of the reliability and validity of the CSDC will be an important contributor to the research and clinical care of children with these disorders.

Among published instruments that assess PTSD in children, the most widely used is the Child PTSD Reaction Index (CPTSD-RI) (Pynoos and Eth, 1986; Pynoos et al., 1987). Other available PTSD inventories are the Children's PTSD Inventory (Saigh, 1988, 1989; Saigh et al., 2000), the Clinician-Administered PTSD Scale-Child and Adolescent version (Nader et al., 1994), an exposure index assessing urban violence entitled 'Things I Have Seen and Heard' (Richters and Martinez, 1993), the PTSD module of the Diagnostic Interview Schedule for Children and Adolescents (Reich, 2000), the Kiddie-Post-Traumatic Symptomology Scale (March et al., 1998), the Impact of Events Scale (Yule and Udwin, 1991), the Children's Impact of Traumatic Events Scale (Wolfe et al., 1991), the Trauma Symptom Checklist for Children (Briere, 1996), and the Children's Reactions to Traumatic Events Scale (Jones, 2002). A recent article in this *Journal* comprehensively reviews many of these instruments (Ohan et al., 2002).

In his review of the literature on the assessment of PTSD in children and adolescents, March (1999) described properties of an ideal assessment tool for PTSD. The ideal assessment tool targeting PTSD was described as one that: (1) provides a reliable and valid ascertainment of symptoms across multiple domains; (2) identifies objective and subjective response to divergent traumatic experiences; (3) evaluates symptom severity; (4) incorporates and reconciles multiple observations, such as parent and child ratings; and (5) is sensitive to treatment-induced changes in symptoms.

The CSDC was developed to meet these challenges. Most of the aforementioned instruments are based on the direct report from the child of his or her symptoms. As an observer-report measure of ASD and PTSD, the CSDC was meant to complement existing instruments. The CSDC offers clinicians and researchers the potential to "incorporate and reconcile" information from the variety of observers with information collected directly from the child, in the service of developing an accurate assessment of ASD and PTSD symptoms in children. Further, to our knowledge, there are no published instruments with established psychometric properties for assessment of child traumatic stress responses in the acute setting. The CSDC is designed to be an appropriate measure of the symptoms of ASD, when administered within 1 month of the trauma, as it includes items that measure acute dissociation. The CSDC thus has a number of advantages: (1) it is a measure of both ASD and PTSD symptoms, depending on the time of administration, (2) it is one of the few observer-report instruments of PTSD and the only observer-report instrument of ASD symptoms, and (3) it takes approximately 10 minutes to complete and thus may be an efficient screening tool for ASD and PTSD. The CSDC is designed to be completed by parents, nurses, teachers, and social service workers as an index of ASD and PTSD symptoms in children.

It should be noted that the distinctions in the *DSM-IV* between ASD and PTSD were made with little research evidence from children. In particular, children's dissociative responses may be different from those of adults. This is particularly relevant for the design of ASD and PTSD measures. If the construct of ASD, itself, is based on an erroneous extrapolation of data on acute dissociation in adults to children, then this will limit the quality of the psychometric properties of instruments designed to measure ASD in children. Nevertheless, the advancement of research on ASD requires the development of psychometrically sound measures. As mentioned, there have been few studies of ASD in children (Daviss et al., 2000).

The following specific aims guide this study: (1) to assess the internal consistency and interrater and test–retest reliability of the CSDC; and 2) to assess the convergent, concurrent, and discriminant validity of the CSDC.

METHOD

Participants

Psychometric data were collected on 84 children who had either experienced a severe burn or had been in a traffic crash.

TABLE 1
Instructions and Sample Items From the Child Stress Disorders Checklist

Instructions: Below is a list of behaviors that describe children. For each item that describes your child **NOW** or **WITHIN THE PAST MONTH**, please circle **2** if the item is **VERY TRUE** or **OFTEN TRUE** of your child. Circle **1** if the item is **SOMEWHAT** or **SOMETIMES TRUE** of your child. If the item is **NOT TRUE** of your child, circle **0**. Please answer all items as well as you can even if some do not seem to apply to your child. The term "event" refers to the **most** stressful experience that you have described above.

Domains	Sample Items
Reexperiencing	Child reports uncomfortable memories of the event.
Increased Arousal	Child startles easily. For example, he or she jumps when hears sudden or loud noises.
Avoidance	Child avoids doing things that remind him or her of the event.
Numbing and Dissociation	Child seems "spaced out" or in a daze.
Reexperiencing	Child acts as if the event were happening again.

Children With Burns. Forty-three of the children were admitted to Shriners Burns Hospital in Boston for an acute burn. The families were approached by a trained research assistant when the child was medically stable. Written informed consent was obtained from the parents, and written assent was also obtained from the child. All children admitted to the hospital were eligible to participate, according to a protocol reviewed by the hospital's institutional review board, unless they or their parents did not speak sufficient English to complete the CSDC and the other study instruments. The mean age of the participants was 11.67 years (SD 3.20 years); 15 were girls and 28 were boys. Sixty-seven percent were white, 21% were black, 4% were Hispanic, 4% were Native American, and 4% were multiracial. The mean percentage of body surface area burned was 12.5% (SD 13.6%, range 1–60%). Approximately 20% of the families approached declined participation.

Children Who Experienced a Traffic Crash. This sample consisted of 41 children who were admitted to a large urban pediatric hospital for a traffic-related injury (injured in a crash as a pedestrian, bicyclist, or vehicle passenger). When the children were medically stable a trained research assistant approached the child and their parents to enroll in a prospective study of psychological sequelae of traffic injuries, according to a protocol approved by the hospital's institutional review board. All children 5 through 17 years of age admitted to the hospital for a traffic-related injury were eligible to participate unless they lived beyond a 2-hour travel distance to the hospital, they or their parents did not speak English, or the child had cognitive limitations that precluded responding to an interview. The mean age of the sample was 10.0 years (SD 3.55 years); 30% were girls and 70% were boys. Forty-two percent were white, 46% were black, 2% were Hispanic, and 10% were Asian-American.

Study Measures

Description of the CSDC. The CSDC is a 36-item observer response instrument that measures the symptoms of ASD and PTSD in children. It consists of 1 traumatic event item, 5 immediate response items, and 30 symptom items. The first item allows for an identification and subjective description of the traumatic event. The immediate response items correspond with the *DSM-IV* A2 criterion of ASD and PTSD. The 30 symptom items ask about the variety of symptoms of ASD and PTSD and generate scores on 5 subscales that correspond with *DSM-IV* symptom groups for ASD and PTSD: Reexperiencing (7 items), Avoidance (5 items), Numbing and Dissociation (8 items), Increased Arousal (6 items), and Impairment in functioning (4 items). The CSDC total score is the sum of ratings on the 30 symptom items. The CSDC matches the response format of the CBCL. Each symptom is rated on a 3-point scale (0 = "not true," 1 = "somewhat true," 2 = "very true"). Table 1 is a copy of the instructions and sample items from each subscale.

Child Behavior Checklist. The Child Behavior Checklist (CBCL) (Achenbach, 1991) is an observer-report questionnaire consisting of 118 behavior problem items and 20 social competence questions. The CBCL provides a total problem score, eight Behavioral Problem Scales, and two "broad" problem scales of (1) externalizing behavior (poor behavior control) and (2) internalizing behavior (e.g., anxiety, depression, withdrawal). Test–retest reliability is 0.87 for the internalizing scale. This scale is internally consistent (Cronbach $\alpha = .89$). A 23-item PTSD scale of the CBCL based on items on the CBCL with high overlap with *DSM-III-R* PTSD symptoms has been created and assessed (Wolfe and Brit, 1997). Sexually abused children had significantly higher scores on this scale than a nonabuse clinical sample. The internal consistency (Cronbach α) of these items in the sexual abuse sample was .89.

Child Dissociation Checklist. The Child Dissociation Checklist (CDC) (Putnam et al., 1993) is a 20-item observer-report checklist that follows the same response pattern as the CBCL and the CSDC and generates a single score that indicates the child's position on the dissociative continuum. It has a 1-year test–retest reliability coefficient of 0.69 and is internally consistent (Cronbach $\alpha = .95$). Children who are known to have dissociative disorders have higher scores on this instrument than nontraumatized children and sexually abused girls who do not have a dissociative disorder, thereby supporting the scale's validity.

Child PTSD Reaction Index. The Child PTSD Reaction Index (CPTSD-RI) (Pynoos and Eth, 1986; Pynoos et al., 1987) is a 20-item semi-structured interview that assesses posttraumatic symptoms in children. Children are asked to rate the frequency of their posttraumatic symptoms on a 5-point Likert scale (0 = "never," 4 = "most of the time"). The measure has been used with many groups of traumatized children, has high test–retest reliability (Cohen $\kappa = 0.88$), and captures the major domains of PTSD. Construct validity is supported by the finding that children who are known to have PTSD have much higher scores on this instrument.

Procedures

Children With Burns. Children were interviewed using the CPTSD-RI within 2 weeks following admission for an acute burn and 3 months following discharge from the hospital. The CSDC, the CBCL, and the CDC were administered to parents as part of a larger assessment battery, at the time of the initial assessment and 3 months later. The CSDC was also administered to parents 2 days following the initial

TABLE 2
Mean (Standard Deviation) CSDC Scores for Burn Sample and Traffic Crash Sample at Initial Assessment and Burn Sample at 3-Month Follow-up

	Acute Burn		Traffic Crash			3-Month Burn		
	Mean	(SD)	Mean	(SD)	t (df = 81)	Mean	(SD)	t (df = 22)
Total	11.11	(9.97)	7.3	(8.15)	1.9*	8.2	(10.95)	1.9*
Reexperiencing	2.95	(3.54)	1.5	(1.91)	2.38**	1.6	(1.88)	1.2**
Arousal	2.67	(2.55)	2.4	(2.89)	0.53	2.2	(3.19)	0.7
Numbing and Dissociation	2.19	(2.10)	2.1	(2.31)	0.28	1.5	(2.64)	2.4**
Avoidance	2.23	(2.54)	0.7	(2.28)	2.88***	1.9	(2.83)	0.4
Functioning	1.05	(1.45)	0.8	(1.27)	0.91	1.2	(2.06)	0.2

Note: Independent samples t test determines differences between Child Stress Disorders Checklist (CSDC) means for acute burn and traffic crash samples. Paired t tests determine differences between CSDC means for acute burn and 3-month burn samples.
* $p < .1$; ** $p < .05$; *** $p < .005$.

assessment. Additionally, the child's primary nurse completed the CSDC, at the time of the subject's initial assessment. The percentage of body surface area burned was also recorded for each child.

Children Who Experienced a Traffic Crash. Children and parents were assessed within 1 month of the crash (ranging from 5 to 30 days, mean 12 days postcrash). The CSDC was administered to parents at this time, as part of a larger assessment of parent and child acute responses to the traffic crash and the injury.

Data Analyses

To determine the psychometric properties of the CSDC, the following analyses were performed.

Reliability. The ratings reported by parents were used to calculate the scale's internal consistency for the sample as a whole and for each of the subsamples. As a measure of interrater reliability the scores reported by parents were correlated with those reported by the primary nurse for the burned sample. CSDC total scores based on ratings by the parent 2 days apart for children with burns were correlated as a measure of test–retest reliability.

Validity. To determine the convergent validity of the CSDC total score as a measure of ASD and PTSD, it was correlated with scores on other psychometrically sound measures of trauma-related symptoms in children: the CPTSD-RI, the CDC, and scores on the PTSD dimension of the CBCL. Correlation of CSDC scores with percentage of total body surface area burned served as a measure of concurrent validity. PTSD symptoms are known to diminish with time (e.g., Nader et. al, 1990; Green et. al, 1994; Milgram et. al, 1988; Schwarzwald et al., 1994); therefore, a decrease in CSDC scores between the acute and 3-month assessment would support the validity of the CSDC and also demonstrate its sensitivity to change. Burn trauma may be a higher magnitude traumatic event than a traffic accident; therefore, higher CSDC scores in the burn sample would also support the validity of this instrument. Discriminant validity was calculated by correlating CSDC scores to the CBCL-PTSD scale versus the CBCL Thought Problems scale ("child hears things," "child sees things," "child displays strange behaviors"). Higher correlations on the PTSD scale than on the Thought Problems scale would indicate discriminant validity.

RESULTS

The mean CSDC total score for the sample of acutely burned children and those who experienced a traffic crash was 11.11 (SD 9.97) and 7.3 (SD 8.15), respectively. The mean CSDC total score for the burned children 3 months after discharge was 8.2 (SD 10.95). The mean CSDC scores for each subscale at the acute phase for each group and the mean subscale scores for the burn sample at 3 months are presented in Table 2.

The internal consistency of the symptom items, for the sample as a whole (n = 84) was Cronbach α = 0.84. The internal consistency for each of the subsamples of burned children and those who experienced a traffic crash was 0.83 and 0.86, respectively. These values suggest that the CSDC is internally consistent across test populations.

Interrater Reliability

The intraclass correlation between total scores reported by the burned child's parent and primary nurse was 0.44 (n = 37). The subscale intraclass scores, as presented in Table 3, ranged from 0.24 to 0.45.

Test–Retest Reliability

Test–retest reliability was examined for the CSDC total score and across each subscale. The correlation between

TABLE 3
Interrater Reliability: Intraclass Correlation Between CSDC Scores Reported by the Parent and Primary Nurse of Children With Burns (n = 37)

CSDC Scale	Correlation
Total score	0.44
Arousal	0.36
Numbing and Dissociation	0.24
Avoidance	0.28
Functioning	0.27
Reexperiencing	0.45

Note: CSDC = Child Stress Disorders Checklist.

TABLE 4
Test–Retest Reliability: Correlation Between CSDC Scores 2 Days Apart Reported by Parents of Children With Burns (n = 34 and n = 23)

CSDC Scale	Correlation
Total score	0.84
Arousal	0.74
Numbing and Dissociation	0.70
Avoidance	0.85
Functioning	0.63
Reexperiencing	0.89

Note: CSDC = Child Stress Disorders Checklist.

total scores reported by parents of burned children 2 days apart was 0.84 (n = 34). The correlations between subscale scores ranged from 0.63 to 0.89 and are presented in Table 4.

Concurrent, Convergent, and Discriminant Validity Scores

Concurrent, convergent, and discriminant validity scores on the CSDC reported by the burned child's parent and nurse, at the time of the initial assessment, were found to be correlated with well-established measures of trauma-related symptomology, measured at the same time (range 0.26 to 0.49). These scores were also significantly correlated to percentage of body surface area burned, with $r = 0.56$, $p < .001$ for parent-reported scores and $r = 0.43$, $p < .01$ for nurse-reported scores. Scores on the CSDC as reported by the child's parent, 3 months after the burn, were also found to be correlated with measures of trauma-related symptomology, measured at the 3-month follow-up (range 0.30 to 0.59). Parent-reported CSDC scores were significantly correlated with the PTSD scale of the CBCL ($r = 0.49$, $p < .01$) and not correlated with the Thought Problems subscale of the CBCL ($r = 0.04$, $p > .05$), which is less associated with PTSD symptomology, suggesting discriminant validity. Similar findings were obtained with the nurse-reported scores of the CSDC. Table 5 displays the results of these correlations.

Differences between acute and 3-month CSDC scores for the burn sample and between the CSDC scores between the burn and traffic crash are illustrated in Table 2. As shown, the mean CSDC total score for the burn sample during the acute hospitalization was 11.11. This score was 8.2, 3 months later. Pairwise t tests reveal this difference is significant at a trend level. CSDC Reexperiencing and Numbing and Dissociation scales were significantly lower at the 3-month follow-up. Because traumatic stress symptoms are expected to decrease with time, these differences

TABLE 5
Concurrent and Convergent Validity: Relationship Between Score on the CSDC and Measures Known to Be Related to PTSD (n = 19 to 43)

Measure	Burn: Parent (Acute)	Burn: Nurse (Acute)	Burn: Parent (3 Months)
TBSA	0.56†	0.43***	0.30
CPTSD-RI	0.39**	0.26*	0.38
CDC	0.49***	0.33**	0.59**
CBCL–PTSD	0.49***	0.35**	0.47**
CBCL–thought	0.04	−0.16	—

Note: CSDC = Child Stress Disorders Checklist; PTSD = posttraumatic stress disorder; TBSA = total body surface area burned; CPTSD-RI = Child PTSD Reaction Index; CDC = Child Dissociation Checklist; CBCL = Child Behavior Checklist.
* $p < .1$; ** $p < .05$; *** $p < .01$; † $p < .001$.

support the validity of the CSDC. Table 5 also shows the mean total CSDC score for the acute traffic crash group as 7.3. This is also lower at a trend level from the acute burn group. The Reexperiencing and Avoidance CSDC scales were significantly lower between the Acute Burn and the Acute Traffic Crash group. Because a burn is expected to be a higher magnitude stressor than a traffic crash, these differences also support the validity of the CSDC.

DISCUSSION

This study examines the psychometric properties of the CSDC (Saxe, 1997), a recently developed observer-rated measure of posttraumatic stress symptoms, and the first instrument to assess acute stress symptoms in children.

As used in this study with two subsamples, children with burns and those who experienced a traffic crash, the CSDC appears to have promising psychometric properties in both the acute and nonacute context.

Reliability

The level of internal consistency of the CSDC was found to be comparable with other established measures of child psychopathology, such as the CBCL. As described, we found an overall Cronbach α of 0.84 (0.83 for traffic crash sample and 0.86 for burn sample) for the CSDC. The internal consistency of the PTSD scale of the CBCL in a sample of sexually abused children was 0.89 (Wolfe and Brit, 1997). The level of internal consistency of the CBCL is 0.62 for the Competence scale and 0.96 for the Behavior Problems scale (Achenbach, 1991). Although the overall internal consistency of the CSDC (Cronbach $\alpha = .84$) is below the internal consistency of the CBCL

Behavior problem score, it is comparable with the internal consistency of the CBCL PTSD scale and above the CBCL Competence scale.

The CSDC demonstrated 2-day test–retest reliability in the children with acute burns. The overall correlation of 0.84 is in the range of that found with the CBCL in which 1-week test–retest reliability was found to be 0.87 for the Competency scale and 0.89 for the Behavior problem scale (Achenbach, 1991). This 2-day period for assessing test–retest reliability was chosen as burned children's clinical state can change rapidly on a critical care unit.

The CSDC also shows interrater reliability with an overall interclass correlation between parent and nurse of 0.44. One of the most controversial areas in psychometrics concerns the standards for interrater reliability as raters may be observing children in widely diverging contexts (Mash and Terdal, 1997). The literature on standards of interrater agreement on observer-report instruments is not well developed. The largest source of information comes from interparent agreement using the CBCL. Achenbach (1991) reported mean interparent agreement correlations ranging from 0.48 to 0.79 for the behavioral problem scales of the CBCL and 0.59 to 0.79 for the Competence scales of the CBCL. A meta-analysis of studies examining interparent agreement revealed a mean correlation of 0.59 (Achenbach et. al, 1987). To our knowledge, there are no studies of the agreement on behavioral observations between a parent and a nurse about a hospitalized child. The somewhat smaller correlation found between parent and nurse observations (.44) is not unexpected as parents and nurses may be basing their observations on different contexts (i.e., the nurse on clinical encounters, the parent on supportive hospital visits). Differences in observational context are known to diminish interrater reliability (Achenbach, 1991; Mash and Terdal, 1997). There may also be differences in the emotional state of the parent and nurse as they complete the CSDC. Parents may be experiencing their own traumatic stress symptoms related to their child's acute burn. This difference in emotional state of observers may influence the rating of the child's symptoms. Given these differences, we think that an interclass correlation between parent and nurse of 0.44 is an acceptable level of interrater reliability for the CSDC. It should be noted that interrater reliability was only assessed acutely.

Validity

As described, the validity of the CSDC was demonstrated in a number of ways in both the acute and nonacute setting, particularly for the burned children: (1) CSDC scores correlated with our index of trauma severity (total body surface area burned), (2) CSDC scores correlated with other measures of traumatic stress in children, (3) CSDC scores did not correlate with a scale that was not expected to measure traumatic stress, and (4) CSDC scores changed with time in the expected direction and were higher for the higher magnitude trauma (burn trauma than traffic crash trauma). It is noteworthy that the "Numbing and Dissociation" scale of the CSDC was most sensitive to change. This finding supports the validity of this instrument, as a reduction in these symptoms would be expected given the prominence of dissociation in ASD and not in PTSD.

As Table 5 indicates, some of the aforementioned support of validity is more clearly demonstrated in the acute than nonacute setting as some correlations did not reach significance in the nonacute setting. Nevertheless, two of three traumatic stress measures were significantly correlated with CSDC scores at 3 months after the burn. The third (CPTSD-RI) yielded almost the identical correlation with the CSDC found at the acute period ($r = 0.38$ versus $r = 0.39$). The lack of significance of the former correlation is likely due to the diminished number of subjects assessed at the 3-month postburn period.

Clinical Implications

There is a great clinical need to develop screening instruments for traumatic stress symptoms in children. Because the CSDC takes about 10 minutes to complete and offers a psychometrically sound profile of ASD and PTSD symptoms, it can be used as a brief screening instrument in a wide variety of clinical and nonclinical settings to identify children at risk. Although the psychometric data presented were restricted to hospital settings with observations from parents and nurses, this instrument is being used in mental health clinics, schools, and social service offices to screen children at risk for significant psychiatric consequences to trauma. Children who are identified as symptomatic on this screening instrument can then receive more detailed diagnostic instruments for ASD or PTSD. Additionally, because the CSDC is one of the only extant instruments that collect traumatic stress symptom data about a child from observer report, it can be used to complement other instruments that collect information from traumatized children directly. Although we do not present data on the use of the CSDC to assess treatment response, our data on its sensitivity to change suggest that

it may be a good measure for this purpose. It is being used for this purpose in a number of settings. A brief assessment of treatment response based on observer's report can have great utility in the clinical setting.

Limitations

A limitation of the present study is that relatively small sample sizes of children were assessed and the majority of data was collected on children with burns. To aid in generalizability, future studies should assess larger groups of subjects who have experienced a more varied type of traumatic exposure. Future studies should also use a control group of children who have not experienced a traumatic event. The small sample also prohibits the examination of age and race effects on the psychometric properties of the CSDC; it would be useful in future studies to assess whether the instrument performs equivalently for parents reporting on children across different developmental stages and for parents and children in a variety of race and ethnic groups. Despite these limitations, these data provide preliminary support for the psychometric properties of the CSDC and underscore its importance as a potentially useful screening measure of acute stress and posttraumatic symptoms in children.

REFERENCES

Achenbach TM, (1991), *Manual for the Child Behavior Checklist/4–18 and 1991 Profile* Burlington, VT: University of Vermont Department of Psychiatry

Achenbach TM, McConaughy SH, Howell CT (1987), Child/adolescent behavioral and emotional problems: implications of cross-informant correlations for situational specificity. *Psychol Bull* 101:213–232

American Psychiatric Association (1994), *Diagnostic and Statistical Manual of Mental Disorders*, 4th ed. Washington, DC: American Psychiatric Association

Briere J (1996), *Trauma Symptom Checklist for Children (TSCC): Professional Manual.* Odessa, FL: Psychological Assessment Resources

Bryant RA (2000), Acute stress disorder. *PTSD Res Q* 109:341–344

Daviss WB, Racusin R, Fleischer A, Mooney D, Ford JD, McHugo G (2000), Acute stress disorder symptomology during hospitalization for pediatric injury. *J Am Acad Child Adolesc Psychiatry* 39:569–575

Green BL, Korol M, Grace MC et al (1991), Children and disaster: age, gender and parental effects on PTSD symptoms. *J Am Acad Child Adolesc Psychiatry* 30:945–951

Green BL, Grace MC, Vary MG, Kramer T, Gleser GC, Leonard AC (1994), Children of disaster in the second decade: a 17-year follow-up of Buffalo Creek survivors. *J Am Acad Child Adolesc Psychiatry* 33:71–79

Jones RT (2002), *The Child's Reaction to Traumatic Events Scale (CRTES): A Self-Report Traumatic Stress Measure.* Available from Russell Jones, PhD, Department of Clinical Psychology, Stress and Coping Lab, Virginia Polytechnic University, 4102 Derring Hall, Blacksburg, VA 24601-0436 (*rtjones@vt.edu or ptl@vt.edu*)

March J (1999), Assessment of pediatric posttraumatic stress disorder. In: *Post Traumatic Stress Disorder*, Saigh PA, Bremner JD, eds. Needham Heights, MA: Allyn and Bacon, pp 199–218

March J, Albano A (1996), Assessment of anxiety in children and adolescents. In: *Review of Psychiatry XV*, Vol 15, Dickstein L, Riba M, Oldham L, eds. Washington, DC: American Psychiatric Press, pp 405–427

March J, Amaya-Jackson L, Terry R, Costanzo P (1998), Post-traumatic symptomology, children and adolescents after an industrial fire. *J Am Acad Child Adolesc Psychiatry* 36:1080–1088

Mash EJ, Terdal LG (1997), *Assessment of Childhood Disorders*, 3rd ed. New York: Guilford

McLeer SV, Deblinger E, Atkins MS, Foa EB, Ralphe DL (1988), Post-traumatic stress disorder in sexually abused children. *J Am Acad Child Adolesc Psychiatry* 27:650–654

Milgram NA, Toubiana YH, Klingman A, Raviv A, Goldstein I (1988), Situational exposure and personal loss in children's acute and chronic stress reactions to a school bus disaster. *J Traumatic Stress* 1:339–352

Nader K, Pynoos R, Fairbanks L (1990), Children's PTSD reactions one year after a sniper attack on their school. *Am J Psychiatry* 147:1526–1530

Nader K, Blake D, Kriegler J, Pynoos R (1994), *Clinician Administered PTSD Scale for Children (caps-c), Current and Lifetime Diagnosis Version, and Instrument Manual.* Los Angeles: UCLA Neuropsychiatric Institute and National Center for PTSD

Ohan JL, Myers K, Collett BR (2002), Ten-year review of rating scales, IV: scales affecting trauma and its effects. *J Am Acad Child Adolesc Psychiatry* 12:1401–1422

Perry BD, Pollard R (1998), Homeostasis, stress, trauma, and adaptation: a neurodevelopmental view of childhood trauma. *Child Adolesc Psychiatry Clin North Am* 7:33–51

Putnam FW, Helmers K, Trickett PK (1993), Development, reliability, and validity of a child dissociation scale. *Child Abuse Negl* 17:519–531

Pynoos RS (1993), Traumatic stress and developmental psychopathology in children and adolescents. In: *American Psychiatric Press Review of Psychiatry*, Vol 10, Oldham JM et al., eds. Washington, DC: American Psychiatric Press, pp 205–238

Pynoos RS (1996), Exposure to catastrophic violence and disaster in childhood. In: *Severe Stress and Mental Disturbance in Children*, Pfeffer CR, ed. Washington DC: American Psychiatric Press, pp 181–211

Pynoos RS, Eth S (1986), Witness to violence: the child interview. *J Am Acad Child Adolesc Psychiatry* 25:306–319

Pynoos RS, Frederick C, Nader K et al (1987), Life threat and posttraumatic stress in school age children. *Arch Gen Psychiatry* 44:1057–1063

Reich W, (2000), Diagnostic Interview for Children and Adolescents (DICA). *J Am Acad Child Adolesc Psychiatry* 39:59–66

Richters J, Martinez P (1993), The NIMH community violence project, I: children as victims and witnesses to violence. *Psychiatry* 56:7–21

Sack WH, Clarke G, Him C et al (1993), A 6-year follow-up study of Cambodian refugee adolescents traumatized as children. *J Am Acad Child Adolesc Psychiatry* 32:431–437

Saigh PA (1988), The validity of the *DSM-III* posttraumatic stress disorder classification as applied to adolescents. *Professional School Psychol* 3:283–290

Saigh PA (1989), The validity of the *DSM-III* posttraumatic stress disorder classification as applied to children. *J Abnorm Psychol* 98:189–192

Saigh PA, Bremner JD (1999), The history of posttraumatic stress disorder. In: *Posttraumatic Stress Disorder: A Comprehensive Text*, Saigh PA, Bremner JD, eds. Boston: Allyn & Bacon, pp 1–17

Saigh PA, Yasik AE, Oberfield RA et al (2000), The children's PTSD inventory: development and reliability. *J Trauma Stress* 13:369–380

Saxe GN (1997), The Child Stress Reaction Checklist: a measure of ASD and PTSD in children. Presented at the International Society for Traumatic Stress Studies 13th Annual Meeting, Montreal

Schwarzwald J, Weisenberg M, Solomen Z, Waysman M (1994), Stress reactions of school age children to the bombardment by Scud missiles: a 1-year follow-up. *J Traumatic Stress* 7:657–667

Spiegel D, Koopman C, Classen C (1994), Acute stress disorder and dissociation. *Aust J Clin Exp Hypnosis* 22:11–23

Stoddard FJ, Norman DK, Murphy JM, Beardslee WR (1989), Psychiatric outcome of burned children and adolescents. *J Am Acad Child Adolesc Psychiatry* 28:589–595

Wolfe VV, Gentile C, Michienzi T, Sas L, Wolfe DA (1991), The children's impact of traumatic events scale: a measure of post-sexual-abuse PTSD symptoms. *Behav Assess* 13:359–383

Wolfe VV, Brit JA (1997), Child sexual abuse. In: *Assessment of Childhood Disorders*, Mash EJ, Terdal LG, eds. New York: Guilford, pp 569–626

Yule W, Udwin O (1991), Screening child survivors for posttraumatic stress disorder: experiences from the Jupiter sinking. *Br J Clin Psychol* 30:131–138